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NOTE BY THE SECRETARY-GENERAL

The Secretary-General has the honour to transmit to the members of the Security Council the attached communication which he has received from the Acting Director General of the International Atomic Energy Agency (IAEA).

Annex

Letter dated 23 August 1994 from the Acting Director General of the International Atomic Energy Agency (IAEA) addressed to the Secretary-General

Please find attached the report of the twenty-fifth IAEA inspection in Iraq under Security Council resolution 687 (1991). You may deem it appropriate to transmit the report to the members of the Security Council. The Director General remains, of course, available with the Chief Inspector, Mr. Garry Dillon, for any consultations you or the Council may wish to have.

(Signed) Boris SEMENOV
Acting Director General

Enclosure

REPORT ON THE TWENTY-FIFTH IAEA ON-SITE INSPECTION IN IRAQ UNDER SECURITY COUNCIL RESOLUTION 687 (1991)

22 June to 01 July, 1994

SALIENT POINTS

The following activities were carried out in the course of the twenty fifth IAEA inspection in Iraq: (i) the implementation of activities in connection with the on-going monitoring and verification plan (OMV), with particular respect to the utilisation of machine tools; (ii) inspections at sites associated with the former nuclear weapons programme and at sites judged to have capabilities that could contribute to a reconstituted nuclear weapons programme; (iii) clarification of matters related to the origin and usage of natural uranium; (iv) installation of a video surveillance system in the flow forming machine tool workshop at the Nassr General Establishment; (v) installation of an additional surveillance unit in the video surveillance system previously installed in the milling and boring machine tool workshop at Um Al Ma'arik; (vi) participation in the UNSCOM inspection at the Al Rutbah telecommunications site; (vii) discussions with Iraqi counterparts on the adequacy of reports prepared by Iraq in accordance with paragraphs 22 and 23 of the OMV; (viii) examination of the inventory of equipment and non-nuclear materials at Tuwaitha and Al Shaykili in order to establish monitoring measures and frequencies. A total of 24 facilities, installations and sites were visited in the course of this inspection.

- Inspections were carried out at twelve sites where items of equipment subject to routine monitoring in accordance with Annex 3 of the OMV plan were located.

- Inspections were also carried out at five sites with previous nuclear or nuclear related missions or which had provided support to the former nuclear programme and at three sites which have been judged to have capabilities which could contribute to a reconstituted nuclear programme.

- Work continued on the characterisation of the uranium material in store at Location C at Tuwaitha. Additional samples were taken in order to facilitate discussions with the technologist from Brazil who was scheduled to visit IAEA headquarters in July 1994 in order to clarify the amount and nature of the natural uranium that was provided to Iraq by Brazil.

- A ten-camera video surveillance system, with photo back-up, was installed in the flow forming machine tool workshop of the Nassr general establishment. The surveillance system is designed to monitor the workpieces produced by these machines, which have the capability to produce centrifuge rotors.

- An additional surveillance unit was installed in the milling and boring machine tool workshop at Um Al Ma'arik.

- Three members of IAEA-25 participated in the UNSCOM inspection of the Al Rutbah telecommunications site, close to the Jordanian border, in the west of Iraq. No activities or equipment or facilities relevant to UNSCR 687 (1991) or proscribed or subject to monitoring under UNSCR 715 (1991) were found.

- Extensive discussions were held with the Iraqi counterparts on the quality and content of the reports prepared by Iraq in accordance with paragraphs 22 and 23 of the OMV. The team provided the Iraqi counterparts with a detailed list of corrections and omissions.

- A detailed inspection was made of the equipment and non-nuclear material in use or in store in Tuwaitha, including the Al Shaykili storage compound, in order to reconcile the IAEA inventory lists and the individual building inventories included in the OMV reports produced by Iraq. During the course of this activity the significance of listed equipment and non-nuclear materials was re-assessed in order to define monitoring measures and the frequency at which these measures should be carried out.

INTRODUCTION

1. This report summarises the results of the twenty-fifth on-site inspection carried out in Iraq by the IAEA under the United Nation Security Council resolution 687 (1991), with the assistance and co-operation of the Special Commission of the United Nations. The inspection took place from 22 June to 01 July 1994 and was lead by Garry Dillon of the IAEA as Chief Inspector. The team consisted of 12 inspectors, comprising 11 nationalities.

2. The objectives of the inspection were essentially focused on preparations for the implementation of the on-going monitoring and verification plan (OMV) and included:

- the implementation of the monitoring data sheets designed to record the status and utilisation of machine tools subject to routine monitoring in accordance with Annex 3 of the OMV.

- the assessment of the quality and completeness of the OMV reports prepared by Iraq in accordance with paragraphs 22 and 23 and the correction of inaccuracies and omissions.

- the verification of the information in the OMV reports at a number of sites associated with the former nuclear weapons programme and at sites judged to have capabilities that could contribute to a reconstituted nuclear weapons programme.

- the completion of the installation of video surveillance systems in engineering workshops where machine tools requiring continuous monitoring are installed.

- the clarification of matters related to the uranium balance and in particular to the amount and nature of the material supplied to Iraq from Brazil.

- the consolidation of the IAEA inventory lists of equipment and non-nuclear material subject to routine monitoring.

INSPECTIONS AT FACILITIES, INSTALLATIONS AND SITES

3. Inspections were carried out at Nassr, Ibn Al Haytham, MIC storage (Baghdad), Al Karama, Al Nidda, Al Daura, Badr, Um Al Ma'arik, Saddam, Al Amir, Al Radwan, Hatteen and the Industrial Engine Factory in order to monitor the status and utilisation of machine tools subject to routine monitoring. In the course of these inspections the machine tool monitoring data sheets were checked and updated.

4. The majority of the engineering establishments appeared to be operating well below their designed production capabilities. The team members experienced no difficulties in obtaining access to production records and workpiece drawings.

5. The results of the inspections showed no indication that these machine tools were being used for proscribed purposes.

6. Inspections were also carried out at three sites - Tarmiya, Al Atheer and Al Sharqat - which were associated with the former nuclear weapons programme. The purpose of these inspections was to check the adequacy of the information in the OMV reports provided by Iraq and to monitor the status of the sites with particular regard to their current usage. In general, the information provided in the OMV reports, with respect to past and current design capabilities and in some cases, activities is lacking in detail and the Iraqi counterparts have been asked to provide more comprehensive information in these areas in their next reports.

7. At the Tarmiya site, nine buildings were visited. The activities in the workshop buildings, 271 and 277, were checked and the equipment previously requested to be released from the currently disused buildings, 225 and 248 was re-examined. The laboratory, building 46 and the pilot plant for new chemical activities, building 57, were inspected, together with the warehouses 62 and 63. The well equipped analytical laboratory, building 74, was also visited.

8. At the Al Atheer site, buildings B9, 14, B41, B42, 85 and 101 were visited. Very little activity was observed. Former capabilities, such as the material characterization and quality control labs (buildings 85 and 14) were observed to have completely changed functions. No equipment related to physical testing is in place and the buildings have been converted into office accommodation, with the exception of part of building 85, which is now used for a small scale pilot plant for the recycling of tungsten carbide.

9. The former EMIS site at Al Sharqat was driven through and there were no signs of any activity at the former EMIS buildings. On the other hand there was considerable civil engineering activity at the Baiji sulfuric and nitric acid production project, but the supply of plant hardware remains to be a problem for the Iraqis.

10. Three sites judged to have capabilities which could contribute to a reconstituted nuclear weapons programme - Al Mansour, Al Hadre and Al Kindi - were inspected. With the proviso mentioned in paragraph 6 above, with respect to the description of design capabilities and activities, the results of these inspections were satisfactory.

VIDEO SURVEILLANCE SYSTEMS

11. A ten-camera multiplexed closed circuit video surveillance system (MUX) was installed in the flow-forming machine workshop at the Nassr engineering establishment. The purpose of this installation is to monitor the workpieces produced by the flow-forming machines which have the capability to produce centrifuge rotors. The facility management cooperated extensively in providing staff and equipment to facilitate the installation of the video cameras, cabling and the control system.

12. A room within the flow-forming machine workshop was allocated to accommodate the control system and the necessary structural changes were made to allow the installation of air-conditioning equipment.

13. The surveillance system was fully installed and put on test within a two week period and appears to be operating satisfactorily. It is however expected that some modifications will be necessary to take account of the effect of high ambient summer temperatures on the video cameras.

14. An additional video surveillance unit was installed in the milling and boring machine tool workshop at Um Al Ma'arik to improve the detail of the coverage of the workpieces produced by these large capacity machine tools which had formerly been used for the fabrication of EMIS components. The support given by the facility management enabled the additional unit to be installed and tested within a two day period.

NON-NUCLEAR MATERIAL AND EQUIPMENT

15. Inspections were made at the Al Shaykili storage complex and at a number of buildings on the Tuwaitha site to check the physical inventory of equipment and non-nuclear materials against the IAEA inventory list and the data provided by Iraq in their OMV reports. No significant discrepancies were found. It was however observed that the latest version of the OMV reports, for the reference date 1989-01-01, did not list "destroyed equipment".

16. In the course of these activities future inspection frequencies were assigned to all listed items.

17. The inspection at the Hatteen site referred to in paragraph 3 above was for the principal purpose of examining their stock of high tensile strength aluminium. The storage arrangements have been significantly improved and this will greatly facilitate the system for controlling the usage of this material, which is to be implemented in accordance with paragraph 25 of OMV and paragraph 5.5 of the annex 3 thereto. The nominal usage rate was quoted to be approximately 750 kg per day.

18. The final consignment of irradiated beryllium components were successfully transferred from the IRT-5000 storage ponds to sealed storage in building 3 at Location C.

OMV REPORTS

19. Part of the team spent several days in intensive discussion with the Iraqi counterparts on the quality and completeness of the information provided by Iraq in their OMV reports. As a result of these discussions the IAEA provided a list of corrections and additions to be made by Iraq.

20. The Iraqi counterparts were advised that these corrections and additions were necessary to provide the IAEA with sufficient information to support the implementation of the on-going monitoring and verification system. The information was provided to the IAEA on 1994-07-06, on magnetic media and its adequacy is under evaluation.

21. The Iraqi counterparts agreed to provide all future OMV report data in database format to facilitate its efficient processing by the IAEA.

URANIUM ACCOUNTANCY

22. Work was continued on the characterisation and accountancy of the natural uranium material in store at Location C with particular regard to the material recovered from the Al Jesira evaporation tanks and the UO_2 of Brazilian supply.

23. During IAEA 24 the Iraqi counterparts suggested that the waste material recovered from the Al Jesira evaporation tank number 051 contained more uranium than is indicated by IAEA analyses and presented their own analytical results showing levels of uranium concentrations greater than those measured by the IAEA.

24. The Iraqi analytical results, from the 6 drums they had sampled, showed a mean moisture content of 32% +/- 9% and a mean uranium concentration, in the dry residue, of 33.5% +/- 10%. Based on these data they calculated the uranium content of the waste material recovered from evaporation tank 051 to be 10.5 tonnes. However taking into account their measurement uncertainties the actual value would be in the range from 6.4 to 15.5 tonnes.

25. On the other hand, the IAEA analytical data from 46 samples show a mean value for the uranium concentration, in the un-dried samples, of 17% +/- 2.3%. Based on the IAEA analyses, the waste material recovered from evaporation tank 051 contains between 6.8 and 8.9 tonnes uranium, with a mean value of 7.9 tonnes.

26. The Iraqi counterparts suggested that the large difference between their results and the IAEA results derived from the fact that the uranium bearing component of the waste was fine particle size material which had settled differentially, over time, resulting in a uranium concentration gradient increasing towards the bottom of the drums.

27. Consequently samples taken near the top of a drum soon after filling, as was the case with the Iraqi samples, would show higher and more representative results than samples taken, similarly near the top of the drums, some months after filling, as was the case with the IAEA samples.

28. In order to test this theory a series of NDA measurements were taken at different heights in the vertical plane on each of 27 drums. The results indicated axial inhomogeneity in the range +/- 5% but no systematic increase in uranium concentration towards the bottom of the drums was found.

29. The drums subjected to NDA measurements were opened and the contents were visually examined. The drum contents were, in each case, found to be similar and to consist of a brown, chunky material with a consistency like that of moist clay. The size of the pieces varied considerably from drum to drum. It was evident that the material was dried sludge, originally about 6 cm thick, which had been broken up upon shoveling into the drums. It is likely that there is significant, drum to drum, variation in the bulk-density of the material and this factor coupled with differences in residual moisture content could explain the minor inhomogeneity shown by the NDA results.

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30. Microscopic examination of a large piece showed it to be homogeneous except for a slightly less brown layer, 2-3 mm thick on the side that would have been in contact with the floor of the tank. By comparison, the same type of material found in the waste pipes which originally carried the material to tank 051 showed considerable layering.

31. Taking into consideration the mixing that would have resulted from the earlier transfer of the material to and from the oil storage tank, some 30 km away from Al Jesira, it is to be expected that the material would be reasonably homogeneous.

32. Based on the IAEA analyses, the NDA results and the visual examination of the waste material, there is no reason to change the IAEA estimate of the amount of uranium in the waste. However some additional samples were taken to confirm the results of previous IAEA analyses and to check some of the results obtained by the Iraqi counterparts.

33. The Al Jesira site was visited in order to further examine the residue of uranium in the recently emptied tank number 052 and to clarify a number of points associated with the material hold-up in plant items at the dump sites. During this visit an inspection was made at the dump site alongside the Suwairah railway depot. The team members were satisfied with the explanation, given by the accompanying Al Jesira facility personnel, as to the previous use of this site. It is reasonable to accept that this dump site had not been used for the storage of uranium.

INSPECTION AT THE AL RUTBAH TELECOMMUNICATIONS SITE

34. Three members of IAEA-25 participated in the, UNSCOM co-ordinated, unannounced inspection at the Al Rutbah telecommunications site located near to the Jordanian border. The site, located to the west of the town of Al Rutbah, comprises two installations enclosed in a fenced area approximately 2.7 km by 0.9 km.

35. One of the installations is an entirely conventional, though powerful, broadcasting station built by Thomson CSF and commissioned in 1988. The other installation is more significant and comprises a large underground bunker, hardened against nuclear and chemical attack, providing protection to a very powerful, self-powered emergency radio station. The bunker design involves advanced technology in the area of electromagnetic radiation protection (applied to cable penetrations) and indicates access to specialised advice. The bunker itself underlines the Iraqi interest and capability with respect to the construction of high technology underground facilities

36. A very careful search was made, using the teams available resources, keeping in mind the possibility of additional concealed sections. There was surprisingly little storage space for survival rations and the small amount of bedding would only be sufficient for the bunker crew. The bunker and its contained facilities are of no relevance to UNSCR 687 and it was the unanimous opinion of the team that it was unlikely that relevant materials or equipment had ever been concealed in the bunker.

Table 1

List of facilities, installations and sites inspected in IAEA-25

1. Al Amir
2. Al Atheer
3. Al Hadre
4. Al Jesira (including Suwairah dump site)
5. Al Karama
6. Al Kindi
7. Al Mansour
8. Al Nidda
9. Al Radwan
10. Al Rutbah
11. Al Sharqat
12. Al Shaykili
13. Badr
14. Daura
15. Falluja lead factory
16. Hatteen
17. Ibn Al Haytham
18. Industrial Engine factory
19. MIC storage (Baghdad)
20. Nassr
21. Saddam State Establishment
22. Tarmiya
23. Tuwaitha
24. Um Al Ma'arik